

## Interview Summary

Application No.

09/037,945

Applicant(s)

Fazan et al

Examiner

George Fourson

Group Art Unit

2823

All participants (applicant, applicant's representative, PTO personnel):

(1) George Fourson

(3) \_\_\_\_\_

(2) Mr. Bear

(4) \_\_\_\_\_

Date of Interview Sep 17, 1999Type: ☐ Telephonic ☒ Personal (copy is given to ☐ applicant ☒ applicant's representative).Exhibit shown or demonstration conducted: ☐ Yes ☒ No. If yes, brief description:Agreement ☒ was reached. ☐ was not reached.Claim(s) discussed: all in general

Identification of prior art discussed:

all relied on in general

Description of the general nature of what was agreed to if an agreement was reached, or any other comments:

A proposed amendment is attached. The proposed amendment requires a one step oxidation to produce the isolation region. Applicant will argue that there is no suggestion to omit the wet oxidation step of Germany '885. Applicant will argue that a hydrogen containing chlorocarbon is typically used as the "chlorocarbon" of Germany '885. The recitation of pressures less than 30 atm overcomes reliance on Marshall.

(A fuller description, if necessary, and a copy of the amendments, if available, which the examiner agreed would render the claims allowable must be attached. Also, where no copy of the amendments which would render the claims allowable is available, a summary thereof must be attached.)

1. ☒ It is not necessary for applicant to provide a separate record of the substance of the interview.

Unless the paragraph above has been checked to indicate to the contrary, A FORMAL WRITTEN RESPONSE TO THE LAST OFFICE ACTION IS NOT WAIVED AND MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a response to the last Office action has already been filed, APPLICANT IS GIVEN ONE MONTH FROM THIS INTERVIEW DATE TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW.

2. ☐ Since the Examiner's interview summary above (including any attachments) reflects a complete response to each of the objections, rejections and requirements that may be present in the last Office action, and since the claims are now allowable, this completed form is considered to fulfill the response requirements of the last Office action. Applicant is not relieved from providing a separate record of the interview unless box 1 above is also checked.

Examiner Note: You must sign and stamp this form unless it is an attachment to a signed Office action.

GEORGE FOURSON  
PRIMARY EXAMINER  
ART UNIT 2823

## STREAMLINED FIELD ISOLATION PROCESS

CLAIMS AFTER PROPOSED AMENDMENT (9/16/99):

5           1.     (Proposed Twice Amended) A process of forming an integrated circuit, comprising:

                  growing a silicon dioxide field isolation region on a semiconductor wafer exclusively by means of a hydrogen-free oxidant at a pressure less than about 30 atm; and

10                   forming a gate oxide without a prior sacrificial oxidation.

                  2.     (Amended) The process of Claim 1, wherein the oxidant consists essentially of oxygen.

                  3.     (Amended) The process of Claim 1, wherein forming the field isolation region comprises exposing the semiconductor substrate to the oxidant at an oxidant partial pressure greater than 5 atm.

                  4.     (Amended) The process of Claim 3, wherein forming the field isolation region comprises maintaining the semiconductor substrate at a temperature greater than 900 °C.

                  8.     (Proposed Twice Amended) A field isolation region among integrated circuit devices on a semiconductor substrate formed by a process comprising:

                  exposing a field region of the semiconductor substrate to a dry oxidizing ambient at a pressure between about 5 atm and 30 atm without **[a further]** any wet oxidation.

                  9.     (Amended) The field isolation region of Claim 8, wherein the semiconductor substrate is maintained at a temperature greater than 900 °C while exposing the field region.

                  11.    (Proposed Amendment) A process of forming electrically isolated integrated devices in a silicon substrate, comprising:

                  masking portions of the substrate to define unmasked field isolation regions;

                  growing field oxide in the field isolation regions by dry oxidation alone at an oxidant partial pressure **[of greater than about]** between about 5 atm and 30 atm and a temperature of greater than about 900°C; and

forming electrical devices between the field isolation regions.

12. The process of Claim 11, wherein growing the field oxide comprises exposing the field isolation regions to an oxidant consisting essentially of oxygen.

13. The process of Claim 11, wherein growing the field oxide comprises  
5 exposing the field isolation regions at an oxidant partial pressure of less than about 30 atm.

14. (Proposed Amendment) A process of forming an integrated circuit on a semiconductor substrate, comprising:

masking portions of the substrate with a mask comprising silicon nitride;

10 growing a field oxide by dry oxidation alone to a thickness sufficient for electrical isolation of devices within the substrate without forming silicon nitride inclusions therein;

removing the mask after growing the field oxide; and

forming a gate oxide of uniform thickness adjacent the field oxide on the semiconductor substrate without performing a prior sacrificial oxidation.

15 15. The process of Claim 14, wherein the growing the field oxide comprises exposing the substrate to a hydrogen-free oxidant.

16. The process of Claim 15, wherein growing the field oxide further comprises maintaining the oxidant partial pressure at about 5-30 atm.

20 17. The process of Claim 15, wherein growing the field oxide further comprises maintaining the substrate at greater than about 900°C.

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